

Appl. No. 10/765,031

Amdt. dated September 26, 2007

Reply to Office Action of August 7, 2007

Claims:

Please amend the claims as follows:

1. (previously amended) In a machine for mowing crop materials, the improvement comprising:

a cutter bed including a series of rotary cutters extending across the path of travel of the machine and rotatable about individual upright axes [;],

said cutter bed further including an elongated, transversely extending, generally flat, hollow gear case below the cutters;

a crop discharge opening located behind the cutter bed for receiving severed crop materials from the series of cutters [.] ;

a pair of transversely extending, oppositely rotating conditioning rolls disposed within and spanning said discharge opening above and behind the cutter bed for conditioning crop materials received from the cutters,

said discharge opening having a pair of opposite ends,

said series of cutters including a group of multiple pairs of intermediate cutters positioned in front of and aligned with said discharge opening with the first and last cutters of said intermediate group being located adjacent said opposite ends of the discharge opening,

said series of cutters further including at least a pair of opposite end cutters located outboard of the first and last cutters of the intermediate group and outboard of said discharge opening;

means for driving the cutters of said intermediate group in oppositely rotating pairs for directing severed material between the cutters of each pair and into the discharge opening,

the first and last cutters of the intermediate group rotating generally inwardly toward the discharge opening across the front of the cutter bed;

means for driving the end cutters in the same direction as their next adjacent first or last cutter of the intermediate group such that the end cutters and the first and last cutters of the intermediate group all rotate generally inwardly toward the discharge opening across the front of the cutter bed[; and] ,

said means for driving the end cutters including gears within said gear case; and  
non-auger conveying means operably associated with each end cutter and its next adjacent intermediate group cutter for moving cut crop materials inwardly toward said discharge opening ,

said conveying means including an endless conveyor belt entrained around the axes of rotation of the end cutter and its next adjacent intermediate group cutter,  
said conveyor belt having a generally upright, flat, front surface and being driven in a direction to move said front surface toward the discharge opening.

2. (previously canceled)

3. (previously canceled)

4. (previously amended) [In a machine for mowing crop materials as claimed in claim

3,]

In a machine for mowing crop materials, the improvement comprising:  
a cutter bed including a series of rotary cutters extending across the path of travel of the machine and rotatable about individual upright axes,  
said cutter bed further including an elongated, transversely extending, generally flat, hollow gear case below the cutters;  
a crop discharge opening located behind the cutter bed for receiving severed crop materials from the series of cutters;

a pair of transversely extending, oppositely rotating conditioning rolls disposed within and spanning said discharge opening above and behind the cutter bed for conditioning crop materials received from the cutters,

said discharge opening having a pair of opposite ends,

said series of cutters including a group of multiple pairs of intermediate cutters positioned in front of and aligned with said discharge opening with the first and last cutters of said intermediate group being located adjacent said opposite ends of the discharge opening,

said series of cutters further including at least a pair of opposite end cutters located outboard of the first and last cutters of the intermediate group and outboard of said discharge opening;

means for driving the cutters of said intermediate group in oppositely rotating pairs for directing severed material between the cutters of each pair and into the discharge opening,

the first and last cutters of the intermediate group rotating generally inwardly toward the discharge opening across the front of the cutter bed;

means for driving the end cutters in the same direction as their next adjacent first or last cutter of the intermediate group such that the end cutters and the first and last cutters of the intermediate group all rotate generally inwardly toward the discharge opening across the front of the cutter bed,

said means for driving the end cutters including gears within said gear case; and

non-auger conveying means operably associated with each end cutter and its next adjacent intermediate group cutter for moving cut crop materials inwardly toward said discharge opening,

said conveying means including an upright generally cylindrical impeller projecting upwardly from each end cutter and its next adjacent intermediate group cutter,

said conveying means further including an intermediate, upright, generally cylindrical impeller located between each end cutter and its next adjacent intermediate group cutter,

said intermediate impeller being rotatable in the same direction as the corresponding end cutter and adjacent intermediate group cutter such that the impellers effectively present a forwardly facing, inwardly moving front surface for conveying cut crop materials toward the discharge opening,

said intermediate impeller comprising a drum having an at least substantially solid exterior wall.

3,] 5. (previously amended) [In a machine for mowing crop materials as claimed in claim

In a machine for mowing crop materials, the improvement comprising:  
a cutter bed including a series of rotary cutters extending across the path of travel of the machine and rotatable about individual upright axes,

said cutter bed further including an elongated, transversely extending, generally flat, hollow gear case below the cutters;

a crop discharge opening located behind the cutter bed for receiving severed crop materials from the series of cutters;

a pair of transversely extending, oppositely rotating conditioning rolls disposed within and spanning said discharge opening above and behind the cutter bed for conditioning crop materials received from the cutters,

said discharge opening having a pair of opposite ends,

said series of cutters including a group of multiple pairs of intermediate cutters positioned in front of and aligned with said discharge opening with the first and last cutters of said intermediate group being located adjacent said opposite ends of the discharge opening,

said series of cutters further including at least a pair of opposite end cutters located outboard of the first and last cutters of the intermediate group and outboard of said discharge opening;

means for driving the cutters of said intermediate group in oppositely rotating pairs for directing severed material between the cutters of each pair and into the discharge opening,

the first and last cutters of the intermediate group rotating generally inwardly toward the discharge opening across the front of the cutter bed;

means for driving the end cutters in the same direction as their next adjacent first or last cutter of the intermediate group such that the end cutters and the first and last cutters of the intermediate group all rotate generally inwardly toward the discharge opening across the front of the cutter bed,

said means for driving the end cutters including gears within said gear case; and

non-auger conveying means operably associated with each end cutter and its next adjacent intermediate group cutter for moving cut crop materials inwardly toward said discharge opening,

said conveying means including an upright generally cylindrical impeller projecting upwardly from each end cutter and its next adjacent intermediate group cutter,

said conveying means further including an intermediate, upright, generally cylindrical impeller located between each end cutter and its next adjacent intermediate group cutter,

said intermediate impeller being rotatable in the same direction as the corresponding end cutter and adjacent intermediate group cutter such that the impellers effectively present a forwardly facing, inwardly moving front surface for conveying cut crop materials toward the discharge opening,

said intermediate impeller comprising a cage having a series of upright members arranged in a circumferentially spaced pattern.

7. (previously canceled)

8. (previously amended) In a machine for mowing crop materials, the improvement comprising:

a cutter bed including a series of rotary cutters extending across the path of travel of the machine and rotatable about individual upright axes,

said cutter bed further including an elongated, transversely extending, generally flat, hollow gear case below the cutters;

a crop discharge opening located behind the cutter bed for receiving severed crop materials from the series of cutters;

a pair of transversely extending, oppositely rotating conditioning rolls disposed within and spanning said discharge opening above and behind the cutter bed for conditioning crop materials received from the cutters,

said discharge opening having a pair of opposite ends,

said series of cutters including a group of multiple pairs of intermediate cutters positioned in front of and aligned with said discharge opening with the first and last cutters of said intermediate group being located adjacent said opposite ends of the discharge opening,

said series of cutters further including at least a pair of opposite end cutters located outboard of the first and last cutters of the intermediate group and outboard of said discharge opening;

means for driving the cutters of said intermediate group in oppositely rotating pairs for directing severed material between the cutters of each pair and into the discharge opening,

the first and last cutters of the intermediate group rotating generally inwardly toward the discharge opening across the front of the cutter bed;

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means for driving the end cutters in the same direction as their next adjacent first or last cutter of the intermediate group such that the end cutters and the first and last cutters of the intermediate group all rotate generally inwardly toward the discharge opening across the front of the cutter bed,

said means for driving the end cutters including gears within said gear case; and

non-auger conveying means operably associated with each end cutter and its next adjacent intermediate group cutter for moving cut crop materials inwardly toward said discharge opening,

said conveying means including an outer upright, generally cylindrical impeller, an inner upright, generally cylindrical impeller, and an intermediate upright, generally cylindrical impeller between said outer and inner impellers,

said impellers all being disposed higher than the cutters and rotatable in the same direction as one another such that front extremities thereof move generally inwardly toward the discharge opening,

said intermediate impeller comprising a drum having an at least substantially solid exterior wall.

9. (previously amended) In a machine for mowing crop materials, the improvement comprising:

a cutter bed including a series of rotary cutters extending across the path of travel of the machine and rotatable about individual upright axes,

said cutter bed further including an elongated, transversely extending, generally flat, hollow gear case below the cutters;

a crop discharge opening located behind the cutter bed for receiving severed crop materials from the series of cutters;

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a pair of transversely extending, oppositely rotating conditioning rolls disposed within and spanning said discharge opening above and behind the cutter bed for conditioning crop materials received from the cutters,

said discharge opening having a pair of opposite ends,

said series of cutters including a group of multiple pairs of intermediate cutters positioned in front of and aligned with said discharge opening with the first and last cutters of said intermediate group being located adjacent said opposite ends of the discharge opening,

said series of cutters further including at least a pair of opposite end cutters located outboard of the first and last cutters of the intermediate group and outboard of said discharge opening;

means for driving the cutters of said intermediate group in oppositely rotating pairs for directing severed material between the cutters of each pair and into the discharge opening,

the first and last cutters of the intermediate group rotating generally inwardly toward the discharge opening across the front of the cutter bed;

means for driving the end cutters in the same direction as their next adjacent first or last cutter of the intermediate group such that the end cutters and the first and last cutters of the intermediate group all rotate generally inwardly toward the discharge opening across the front of the cutter bed,

said means for driving the end cutters including gears within said gear case; and

non-auger conveying means operably associated with each end cutter and its next adjacent intermediate group cutter for moving cut crop materials inwardly toward said discharge opening,

said conveying means including an outer upright, generally cylindrical impeller, an inner upright, generally cylindrical impeller, and an intermediate upright, generally cylindrical impeller between said outer and inner impellers,



said impellers all being disposed higher than the cutters and rotatable in the same direction as one another such that front extremities thereof move generally inwardly toward the discharge opening,

said intermediate impeller comprising a cage having a series of upright members arranged in a circumferentially spaced pattern.

10. (previously amended) In a machine for mowing crop materials, the improvement comprising:

a cutter bed including a series of rotary cutters extending across the path of travel of the machine and rotatable about individual upright axes,

said cutter bed further including an elongated, transversely extending, generally flat, hollow gear case below the cutters;

a crop discharge opening located behind the cutter bed for receiving severed crop materials from the series of cutters;

a pair of transversely extending, oppositely rotating conditioning rolls disposed within and spanning said discharge opening above and behind the cutter bed for conditioning crop materials received from the cutters,

said discharge opening having a pair of opposite ends,

said series of cutters including a group of multiple pairs of intermediate cutters positioned in front of and aligned with said discharge opening with the first and last cutters of said intermediate group being located adjacent said opposite ends of the discharge opening,

said series of cutters further including at least a pair of opposite end cutters located outboard of the first and last cutters of the intermediate group and outboard of said discharge opening;

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means for driving the cutters of said intermediate group in oppositely rotating pairs for directing severed material between the cutters of each pair and into the discharge opening,

the first and last cutters of the intermediate group rotating generally inwardly toward the discharge opening across the front of the cutter bed;

means for driving the end cutters in the same direction as their next adjacent first or last cutter of the intermediate group such that the end cutters and the first and last cutters of the intermediate group all rotate generally inwardly toward the discharge opening across the front of the cutter bed,

said means for driving the end cutters including gears within said gear case; and

non-auger conveying means operably associated with each end cutter and its next adjacent intermediate group cutter for moving cut crop materials inwardly toward said discharge opening,

said conveying means including an outer upright, generally cylindrical impeller, an inner upright, generally cylindrical impeller, and an intermediate upright, generally cylindrical impeller between said outer and inner impellers,

said impellers all being disposed higher than the cutters and rotatable in the same direction as one another such that front extremities thereof move generally inwardly toward the discharge opening,

said intermediate impeller being suspended above and in spaced relation to the cutter bed,

said intermediate impeller having a drive shaft therefor extending downwardly into the intermediate impeller from above the same.

11. (previously amended) In a machine for mowing crop materials, the improvement comprising:

a cutter bed including a series of rotary cutters extending across the path of travel of the machine and rotatable about individual upright axes,

said cutter bed further including an elongated, transversely extending, generally flat, hollow gear case below the cutters;

a crop discharge opening located behind the cutter bed for receiving severed crop materials from the series of cutters;

a pair of transversely extending, oppositely rotating conditioning rolls disposed within and spanning said discharge opening above and behind the cutter bed for conditioning crop materials received from the cutters,

said discharge opening having a pair of opposite ends,

said series of cutters including a group of multiple pairs of intermediate cutters positioned in front of and aligned with said discharge opening with the first and last cutters of said intermediate group being located adjacent said opposite ends of the discharge opening,

said series of cutters further including at least a pair of opposite end cutters located outboard of the first and last cutters of the intermediate group and outboard of said discharge opening;

means for driving the cutters of said intermediate group in oppositely rotating pairs for directing severed material between the cutters of each pair and into the discharge opening,

the first and last cutters of the intermediate group rotating generally inwardly toward the discharge opening across the front of the cutter bed;

means for driving the end cutters in the same direction as their next adjacent first or last cutter of the intermediate group such that the end cutters and the first and last cutters of the intermediate group all rotate generally inwardly toward the discharge opening across the front of the cutter bed,

said means for driving the end cutters including gears within said gear case; and

non-auger conveying means operably associated with each end cutter and its next adjacent intermediate group cutter for moving cut crop materials inwardly toward said discharge opening,

said conveying means including an outer upright, generally cylindrical impeller, an inner upright, generally cylindrical impeller, and an intermediate upright, generally cylindrical impeller between said outer and inner impellers,

said impellers all being disposed higher than the cutters and rotatable in the same direction as one another such that front extremities thereof move generally inwardly toward the discharge opening,

said outer impeller being rotatable on the same axis as the end cutter and said inner impeller being rotatable on the same axis as the next adjacent intermediate group cutter.

12. (previously amended) In a machine for mowing crop materials, the improvement comprising:

a cutter bed including a series of rotary cutters extending across the path of travel of the machine and rotatable about individual upright axes,

said cutter bed further including an elongated, transversely extending, generally flat, hollow gear case below the cutters;

a crop discharge opening located behind the cutter bed for receiving severed crop materials from the series of cutters;

a pair of transversely extending, oppositely rotating conditioning rolls disposed within and spanning said discharge opening above and behind the cutter bed for conditioning crop materials received from the cutters,

said discharge opening having a pair of opposite ends,

said series of cutters including a group of multiple pairs of intermediate cutters positioned in front of and aligned with said discharge opening with the first and last cutters of said intermediate group being located adjacent said opposite ends of the discharge opening,

said series of cutters further including at least a pair of opposite end cutters located outboard of the first and last cutters of the intermediate group and outboard of said discharge opening;

means for driving the cutters of said intermediate group in oppositely rotating pairs for directing severed material between the cutters of each pair and into the discharge opening,

the first and last cutters of the intermediate group rotating generally inwardly toward the discharge opening across the front of the cutter bed;

means for driving the end cutters in the same direction as their next adjacent first or last cutter of the intermediate group such that the end cutters and the first and last cutters of the intermediate group all rotate generally inwardly toward the discharge opening across the front of the cutter bed,

said means for driving the end cutters including gears within said gear case; and

non-auger conveying means operably associated with each end cutter and its next adjacent intermediate group cutter for moving cut crop materials inwardly toward said discharge opening,

said conveying means including an outer upright, generally cylindrical impeller, an inner upright, generally cylindrical impeller, and an intermediate upright, generally cylindrical impeller between said outer and inner impellers,

said impellers all being disposed higher than the cutters and rotatable in the same direction as one another such that front extremities thereof move generally inwardly toward the discharge opening,  
the axes of rotation of the three impellers being generally disposed in a line.

13. (previously added) In a machine for mowing crop materials as claimed in claim 12,  
said line of the axes of rotation of the three impellers extending generally parallel with a front edge of the cutter bar.

14. (previously amended) In a machine for mowing crop materials, the improvement comprising:

a cutter bed including a series of rotary cutters extending across the path of travel of the machine and rotatable about individual upright axes,  
said cutter bed further including an elongated, transversely extending, generally flat, hollow gear case below the cutters;  
a crop discharge opening located behind the cutter bed for receiving severed crop materials from the series of cutters;  
a pair of transversely extending, oppositely rotating conditioning rolls disposed within and spanning said discharge opening above and behind the cutter bed for conditioning crop materials received from the cutters,  
said discharge opening having a pair of opposite ends,  
said series of cutters including a group of multiple pairs of intermediate cutters positioned in front of and aligned with said discharge opening with the first and last cutters of said intermediate group being located adjacent said opposite ends of the discharge opening,

said series of cutters further including at least a pair of opposite end cutters located outboard of the first and last cutters of the intermediate group and outboard of said discharge opening;

means for driving the cutters of said intermediate group in oppositely rotating pairs for directing severed material between the cutters of each pair and into the discharge opening,

the first and last cutters of the intermediate group rotating generally inwardly toward the discharge opening across the front of the cutter bed;

means for driving the end cutters in the same direction as their next adjacent first or last cutter of the intermediate group such that the end cutters and the first and last cutters of the intermediate group all rotate generally inwardly toward the discharge opening across the front of the cutter bed,

said means for driving the end cutters including gears within said gear case; and

non-auger conveying means operably associated with each end cutter and its next adjacent intermediate group cutter for moving cut crop materials inwardly toward said discharge opening,

said conveying means including an outer upright, generally cylindrical impeller, an inner upright, generally cylindrical impeller, and an intermediate upright, generally cylindrical impeller between said outer and inner impellers,

said impellers all being disposed higher than the cutters and rotatable in the same direction as one another such that front extremities thereof move generally inwardly toward the discharge opening,

said front extremities of the outer, inner, and intermediate impellers being generally in transverse alignment with one another.